



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
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SWA3-3

Job Sheet 192204



Part No: SWA3-3

Job Qty: 1 pcs

Part Name: Electric Swivel 3,000 lb Safe Work Load (1,360 Kg)



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 3/19/19

Job Tracking No:

Due Date: 5/3/19

Created By: Marie Lajeunesse

Type: SOLD

Description: *Order 13786*

Note: DWG SWA3-3 Rev 3 IPP Rev A 18.02.13 New issue DP Verify DD

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup Hrs	Run Hrs	Workcenter / Supplier	Lead Time	
100	External Load - 1	1 pcs	5/3/19	5/3/19	0.00	2.00	External Load - 1		AP
							External Load - 2		
							External Load - 3		
110	External Load - 2 - B4B	1 pcs	5/3/19	5/3/19	0.00	2.00	External Load - 1 - B4B		AP 2019/04/01 Michel
							External Load - 2 - B4B		
							External Load - 3 - B4B		
120	QC 5	1 pcs	5/3/19	5/3/19	0.00	0.00	QC 5 - 10		
							QC 5 - 12		
							QC 5 - 17		
							QC 5 - 18		
							QC 5 - 19		
							QC 5 - 22		
							QC 5 - 24		
							QC 5 - 3		
							QC 5 - 42		
							QC 5 - 43		
							QC 5 - 49		
							QC 5 - 51		
							QC 5 - 58		
							QC 5 - 68		
							QC 5 - 9		
							QC 5 - 50		
125	DC - 1 - B4B	1 pcs	5/3/19	5/3/19	0.00	0.00	DC - 1 - B4B		
							DC - 2 - B4B		
130	Packaging 3-1 - Stock - B4B	1 pcs	5/3/19	5/3/19	0.00	0.00	Packaging 3 - 1 - B4B		
							Packaging 3 - 2 - B4B		
							Packaging 3 - 3 - B4B		
							Packaging 3 - 4 - B4B		
							Packaging 3 - 5 - B4B		



Dart Aerospace Ltd.
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CANADA
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Container No: S165704



Part: SWA3-3

Job No: 192204

Serial No/Batch: S165704

Revision: 3

Inspector:

Exp Date:

Instructions:

Date: 03/25/19

APR 16 2019

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				Packaging 3 - 6 - B4B	
				Packaging 3 - 7 - B4B	
				Packaging 3 - 8 - B4B	989 30 DAS
				Packaging 3 - 9 - B4B	
				Packaging 3 - 10 - B4B	
				Packaging 3 - 11 - B4B	
				Packaging 3 - 12 - B4B	
				Packaging 3 - 13 - B4B	
				Packaging 3 - 14 - B4B	
				Packaging 3 - 15 - B4B	
				Packaging 3 - 16 - B4B	
				Packaging 3 - 17 - B4B	
				Packaging 3 - 18 - B4B	
				Packaging 3 - 19 - B4B	
				Packaging 3 - 20 - B4B	
				Packaging 3 - 21 - B4B	
				Packaging 3 - 22 - B4B	
				Packaging 3 - 23 - B4B	
				Packaging 3 - 24 - B4B	
				Packaging 3 - 25 - B4B	
				Packaging 3 - 26 - B4B	
				Packaging 3 - 27 - B4B	
				Packaging 3 - 28 - B4B	
				Packaging 3 - 29 - B4B	
				Packaging 3 - 30 - B4B	
				Packaging 3 - 31 - B4B	
				Packaging 3 - 32 - B4B	
				Packaging 3 - 33 - B4B	
				Packaging 3 - 34 - B4B	
				Packaging 3 - 35 - B4B	
				Packaging 3 - 36 - B4B	
140	QC 21 - FG	1 pcs	5/3/19	0.00 0.00	QC 21 - FG - 21
					QC 21 - FG - 70
					QC 21 - SA - 53

DAS
70
9-89

APR 17 2019

Part Op 100 - (Small Fab) -Assemble as per DWG. Sheet 1 ***All assembly to be done in accordance with SWA3 swivel manual***
 Descriptions: Engrave T/N And / or S/N number as required Using Marktronic engraver as per DWG. Laser engrave dart logo as per DWG.
 110 - (Small Fab) -Assemble as per DWG. Sheet 1 ***All assembly to be done in accordance with SWA3 swivel manual***
 Engrave T/N And / or S/N number as required Using Marktronic engraver as per DWG. Laser engrave dart logo as per DWG.
 120 - (QC5- Inspect part completeness to step on W/O)
 125 - (Document Control) Photocopy blue file OM & OOPM-SWA3A Rev3
 130 - (Identify as per dwg & Stock Location:_____) Bag and tag
 140 - (QC21- Final Inspection - Work Order Release)

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
188-FPSS-832-1/4	Set Screw	1 Ea (1 ea)	100-External Load - 1	5165060
92210A303	Flat Socket Cap Screw	4 pcs (4 ea)	110-External Load - 2 - B4B	5135587
EL-PLUG-F	3-Prong Female Spade Plug	1 Ea (1 ea)	110-External Load - 2 - B4B	5163923
EL-PLUG-M	3-Prong Male Spade Plug	1 Ea (1 ea)	110-External Load - 2 - B4B	5164040
EL314-8-TOW	Long Line Electrical Wire, 14/3 Gauge	6 ft (6 ea)	110-External Load - 2 - B4B	5159114
SWA3-100	Upper End - Swa3 Swivel	1 pcs (1 ea)	110-External Load - 2 - B4B	5150016
SWA3-200	Lower End	1 pcs (1 ea)	110-External Load - 2 - B4B	5150858
SWA3-300	Wire Clamp	2 pcs (2 ea)	110-External Load - 2 - B4B	5132953
SWA3-400	Button Head Screw	2 pcs (2 ea)	110-External Load - 2 - B4B	5156074
SWA3-500B	Contact Spacer	1 pcs (1 ea)	110-External Load - 2 - B4B	5029402
SWA3-600	O-Ring	1 pcs (1 ea)	110-External Load - 2 - B4B	5142445
SWA3-700	9529K15 Bearing Balls - 1/4"	32 Ea (32 ea)	110-External Load - 2 - B4B	5151944
SWA6A-1900	1/4" Female Spade Connector	6 Ea (6 ea)	110-External Load - 2 - B4B	5084069
SWA6A-900B	Rotary Connector - 3 wire	1 Ea (1 ea)	110-External Load - 2 - B4B	5151541

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Job Allocations

Operation	Component Part	Required	Inventory	Allocated
100-External Load - 1	188-FPSS-832-1/4	1	21	0
110-External Load - 2 - B4B	92210A303	4	76	0
	EL-PLUG-F	1	12	0
	EL-PLUG-M	1	33	0
	EL314-SJTOW	6	718	0
	SWA3-100	1	4	0
	SWA3-200	1	2	0
	SWA3-300	2	23	0
	SWA3-400	2	3	0
	SWA3-500B	1	0	0
	SWA3-600	1	3	0
	SWA3-700	32	357	0
	SWA6A-1900	6	229	0
	SWA6A-900B	1	11	0

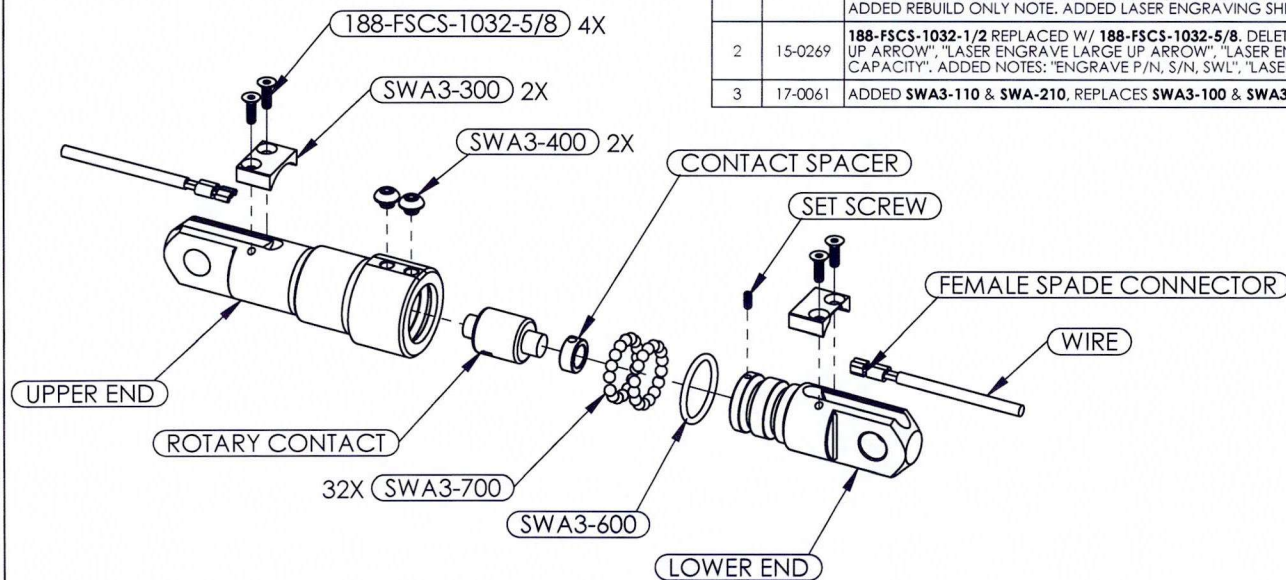
Part Specifications

Specifications could not be found.

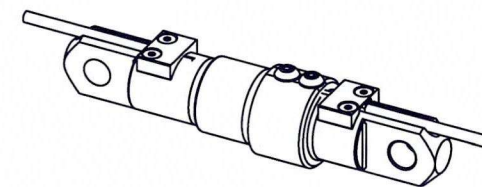
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Lactite 242 (M138933)
Aeroshell grease no. 7 (M138724)
Silicone ge (M139008)

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REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
A		REPLACED ID DECAL 600.1318 WITH LASER ETCHING	11/16/2012	JAG	
B		REMOVED 2 WIRE HARNESS	8/8/2013	JAG	RW
1	15-0079	UPDATED TO NEW DRAFTING STANDARDS. ADDED SWA6A-2000, 188-FPSS-832-3/8, EL314-SJTOW CH'D QTY'S: -2 ASSY WAS 6 IS 1, -3 ASSY WAS 6 IS 1. ADDED 6 FT. TO B/O INFO. EL404-ARTIC CH'D QTY'S: -4 ASSY WAS 6 IS 1. ADDED 6 FT. TO B/O INFO. SWA6A-1900 CH'D QTY'S: -4 ASSY WAS 8 IS 4. ADDED REBUILD ONLY NOTE. ADDED LASER ENGRAVING SHEET.	4/16/2015	DPD	JAG
2	15-0269	188-FSCS-1032-1/2 REPLACED W/ 188-FSCS-1032-5/8. DELETED NOTES: 2X "LASER ENGRAVE SMALL UP ARROW", "LASER ENGRAVE LARGE UP ARROW", "LASER ENGRAVE DART LOGO P/N S/N CAPACITY". ADDED NOTES: "ENGRAVE P/N, S/N, SWL", "LASER ENGRAVE DART LOGO".	9/23/2015	DPD	JAG
3	17-0061	ADDED SWA3-110 & SWA-210, REPLACES SWA3-100 & SWA3-200 IN -4 ASSY.	3/23/2017	DPD	JAG



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UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 192204 HW
19-03-19

-2 QTY	-3 QTY	-4 QTY	B/O	Part #	Description	Material	B/O INFORMATION OR SPECIFICATIONS	PG.
1	1	-		SWA3-100	UPPER END			1
-	-	1		SWA3-110	UPPER END			1
1	1	-		SWA3-200	LOWER END			1
-	-	1		SWA3-210	LOWER END			1
2	2	2		SWA3-300	WIRE CLAMP			1
2	2	2		SWA3-400	BUTTON HEAD SCREW			1
1	-	-		SWA3-500	CONTACT SPACER			1
-	1	1		SWA3-500B	CONTACT SPACER			1
1	1	1		SWA3-600	O-RING			1
32	32	32	B/O	SWA3-700	BALL BEARING	S.S.	Ø1/4 MCMaster-CARR #9529K15	1
1	-	-	B/O	SWA6A-900A	ROTARY CONTACT		MERCOTAC #230	1
-	1	-	B/O	SWA6A-900B	ROTARY CONTACT		MERCOTAC #330	1
-	-	1	B/O	SWA6A-900C	ROTARY CONTACT		MERCOTAC #430	1
4	4	4	B/O	188-FSCS-1032-5/8	FLAT SOCKET CAP SCREW	S.S.	10-32 x 5/8 (MCMaster-CARR #92210A303)	1
1	1	-	B/O	EL314-SJTOW	3 WIRE		6 FT. (TEXCAN #EL 314-SJ TOW 3/14)	1
-	-	1	B/O	EL414-ARTIC	4 WIRE		6 FT. (TRUCK & AUTO SUPPLY #EL 414-ARTIC 4/14)	1
-	1	1	B/O	188-FPSS-832-1/4	SET SCREW	18-8 S.S.	8-32 X 1/4 MCMaster-CARR #92311A190	1
1	-	-	B/O	188-FPSS-832-3/8	SET SCREW	S.S.	8/32 X 3/8 (MCMaster-CARR #92311A192)	1
4	6	4	B/O	SWA6A-1900	1/4" FEMALE SPADE CONNECTOR		(MCMaster-CARR #69525K16)	1
-	-	4	B/O	SWA6A-2000	1/8" FEMALE SPADE CONNECTOR		(MCMaster-CARR #69525K14)	1
1	1	1	B/O	600.1319	UP DECAL			N/S
1	1	1	B/O	EL-PLUG-F	FEMALE PLUG	PE High Density	(MCMaster-CARR #7216K6)	1
1	1	1	B/O	EL-PLUG-M	MALE PLUG	PE High Density	(MCMaster-CARR #7216K5)	1
-2 QTY	-3 QTY	-4 QTY						

NOTES:

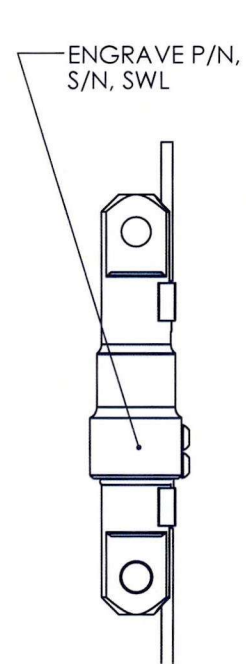
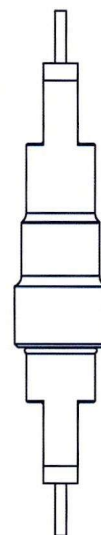
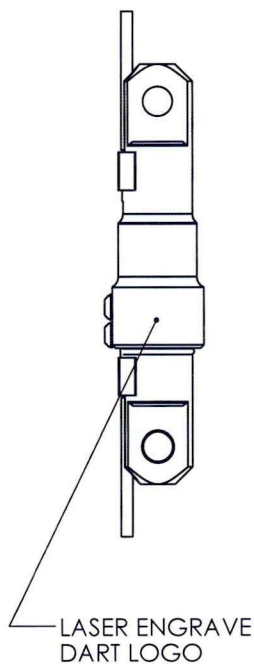
1. ALL ASSEMBLY TO BE DONE IN ACCORDANCE WITH SWA3 SWIVEL MANUAL.

2. FOR CUSTOMER REBUILD ONLY.

		TITLE	
		SWA3 SWIVEL	
DWG NO.		REV	
SWA3		3	
MATERIAL		UNLESS OTHERWISE SPECIFIED	
TREAT		DIMENSIONS ARE IN INCHES	
FINISH		.XXX ± .005 FRACTIONS ± 1/8	
SPEC		XX ± .01 ANGLES ± 5°	
		X ± .1 SURFACES ± 125	
DRAWN BY: CANAM		1. BREAK ALL SHARP EDGES .015 x 45° OR .015R	
CHECKED: SM 03/23/2017		2. DIMENSIONAL LIMITS APPLY AFTER PLATING	
OPPS APPR: AA 03/28/2017		3. INTERPRET DIM AND TOL PER ASME Y14.5M-2009	
QA APPR: JL 04/05/2017		USED ON MODEL	
APPROVED: JAG 04/11/2017			
SCALE	1:4	DATE	
			SHEET 1 OF 2

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REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1	15-0079	ADDED LASER ENGRAVING SHEET.	4/16/2015	DPD	JAG
2	15-0269	DELETED NOTES: 2X "LASER ENGRAVE SMALL UP ARROW", "LASER ENGRAVE LARGE UP ARROW", "LASER ENGRAVE DART LOGO P/N S/N CAPACITY". ADDED NOTES: "ENGRAVE P/N, S/N, SWL", "LASER ENGRAVE DART LOGO".	9/23/2015	DPD	JAG



DART AEROSPACE	
TITLE SWA3 SWIVEL	
DWG NO. SWA3	REV 3
MAT'L _____ HEAT TREAT FINISH _____ SPEC _____	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .005 FRACTIONS ± 1/8 .XX ± .01 ANGLES ± .5° .X ± .1 SURFACES = 125/✓ 1. BREAK ALL SHARP EDGES .015 x 45° OR .015R 2. DIMENSIONAL LIMITS APPLY AFTER PLATING 3. INTERPRET DIM AND TOL PER ASME Y14.5M-2009
DRAWN BY: CANAM	USED ON MODEL
CHECKED: SM 03/23/2017	
OPPS APPR: AA 03/28/2017	
QA APPR: JL 04/05/2017	
APPROVED: JAG 04/11/2017	
SCALE 1:4	DATE
SHEET 2 OF 2	

Entered: _____ Date: _____



WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. _____

Route update only ☐

Job: _____ Part No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐	DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Engineering ☐ Water Jet ☐ Supplier ☐ Quality ☐			
Date :	Sequence #:	QTY Affected :		MRB (QSI042)	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor	
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Presservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐		FAULT CATEGORY ☐ Pressure/Forced ☐ Bending ☐ Crushing ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled ☐ Contamination ☐ Misaligned/off center ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set/Set-up ☐ Positioned Wrong ☐ Outside Tolerance ☐ Drawing ☐ Finish ☐ Part Lost/Missing ☐ Misread			
Other/Details:					

DQA: _____ Date: _____

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: <u>192204</u> Part No. <u>SWA### Swivels</u> NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width:100%;"> <tr> <td>Skid-tube ☐</td> <td>Cross tube ☐</td> <td>Water Jet ☐</td> <td>Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>	Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐															
Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐															
Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐															
Large Fab ☐	Composite ☐	Supplier ☐																

Date : <u>2019/04/01</u>	Step #: _____	QTY Effective : _____	MRB (QSI042) Approval <i>M. Lee</i> Feb 01, 2018
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Description Work Order Deviation	Disposition	
- Use a combination of heatshrink tubing and RTV Silicone to create a watertight seal around all electrical connections. - Use a D2728-1 Placard in place of the laser engraved Dart logo	These deviations are acceptable to carry out on the following swivels: - SWA3 - SWA6A - SWA10A - SWA15A - SWA25A - PSWA25A There is no impact on fit, form or function.	Completed By <u>A. PATEY</u> Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval

Root Cause				FAULT CATEGORY			
Environment ☐		No Re-verification ☐		Pressure/Forced ☐		Temperature/Cure ☐	
Design ☒		Operator ☐		Bending ☐		Set-up ☐	
Doc/Data ☐		Offset/Setup ☐		Centre Not Concentric ☐		BOM/Route ☐	
Equip/Tooling ☐		Supplier ☐		Cracks ☐		Broken/Damage/Defect ☐	
Handling/Pre ☐		Training ☐		Crimp/Kink/Ripple/Wave ☐		Inspection Incomplete/Unqualified ☐	
Material ☐		Use for Testing ☐		Cuffs ☐		Contamination ☐	
Internal Transport ☐		Poor Information ☐		Crushing ☐		Countersink ☐	
Tribal Knowledge ☐		Rushing ☐		Heat Treat ☐		Cut Too Short ☐	
LOA ☐	☒	Product Improvement ☐		Wave/Twist in Tube ☐		Instructions Incomplete/Unclear ☐	
Substation ☐	☒	Process Improvement ☐		Marks/Chatter ☐		Drill Holes ☐	
Past Expiry Date ☐		Manufacturing Process ☐		OTHER : _____			
Misidentified ☐		Past Due ☐					

Work Order 192204Customer 13786Number of Wires 3Date 2019-3-29Serial Number 5165704

Number of Cycles	Load (Lbs.)	Action	Pass/Fail
1	3,000	Check for Conductivity against all wires.	- Pass
1	3,000	Check all wires for grounding against swivel body.	- Pass
1	1,500	Check for Conductivity against all wires.	- Pass
1	1,500	Check all wires for grounding against swivel body.	- Pass
1	750	Check for Conductivity against all wires.	- Pass
1	750	Check all wires for grounding against swivel body.	- Pass
1	0	Check for Conductivity against all wires.	- Pass
1	0	Check all wires for grounding against swivel body.	- Pass

Test Conducted By: Michel Labonde
TechnicianSignature: Sylvain Boncher
QC 5, Small FAB / QA**Submit**